

ARTS INTEGRATION LESSON PLAN OVERVIEW

TITLE OF LESSON: *Exploring the Desert Ecosystem through Science and Art* presented by Catherine Nash, M.F.A; Artist Residency at Wakefield Middle School, TUSD, 3/09

DURATION: 7th gr.: 12 classroom sessions; 6th gr.: 6 classroom sessions

GRADE LEVEL: 6th/7th gr. science classes

OVERVIEW:

An exciting residency integrating visual art and science at Wakefield Middle School (TUSD) was developed in collaboration with myself, the 6th/7th gr. science teachers and Darden Bradshaw, OMA Arts Integration Specialist. The focus was the desert ecosystem: watershed, interdependence of life, plant structure and animal habitat/life patterns. After I presented info on the Lewis and Clark expedition's drawn records of "discovered" species of plants and animals, students distressed their own hand bound journals to look very old...a bit like Lewis Meriwether's original. They drew from desert plants brought into the classroom, learning about their structure and growth patterns as well as their historical use as medicine and food (collaborative lectures given by myself and the science teachers). Our focus shifted to desert mammals, birds and reptiles. Students researched an animal in depth through drawn/written notations in their journals using extensive info packets that I provided. Finally, a close-up drawing of their animal became foreground for beautiful landscape watercolor paintings replete with specific species of plants and creatures. A final field trip to Feliz Paseos Park with environmental educators from Pima County Parks & Rec offered students the opportunity to learn, observe and draw now recognizable species in their original desert habitat.

ARIZONA STATE STANDARD (S) BEING ADDRESSED:

www.ade.state.az.us/standards/contentstandards.asp

P.O. (S) FOR SCIENCE:

Grade 6:

Concept 1: Structure and Function in Living Systems

Understand the relationships between structures and functions of organisms.

PO 6. Relate the following structures of living organisms to their functions:

Animals

- respiration – gills, lungs
- digestion – stomach, intestines
- circulation – heart, veins, arteries, capillaries
- locomotion – muscles, skeleton

Plants

- transpiration – stomata, roots, xylem, phloem
- absorption – roots, xylem, phloem
- response to stimulus (phototropism, hydrotropism, geotropism) – roots, xylem, phloem

Grade 6 & 7:

Concept 2: Scientific Testing (Investigating and Modeling)

Design and conduct controlled investigations.

PO 4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).

PO 5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.

Grade 7:

Concept 3: Populations of Organisms in an Ecosystem

Analyze the relationships among various organisms and their environment.

PO 1. Compare food chains in a specified ecosystem and their corresponding food web.

PO 2. Explain how organisms obtain and use resources to develop and thrive in:

- niches
- predator/prey relationships

P.O. (S) FOR ARTS:

Strand 1: Create/Concept 1: Creative Process

*Students drew and sketched in their journals, then learned how to select their best efforts to develop into a larger completed artwork.

Strand 1: Create/Concept 3: Elements and Principles

*They learned to create by employing the elements and principles of design in interesting and well balanced compositions.

Strand 2: Relate/Concept 1: Artworlds

*Exposed to exciting career opportunities in scientific illustration, students became newly aware of a particular path in the arts.

Strand 3: Evaluate/Concept 4 Meanings or purposes and 5 Quality

*They developed their own assessment rubrics; critiquing own and others work.

TEACHER'S ROLE DURING LESSON:

Collaborative lectures were given by myself and the science teachers, who also fully participated throughout the lessons doing the same work that the students did. This not only gave them a unique opportunity to work with their students, but also gave them full understanding of the lessons for future integration into their curriculum.

BACKWARD MAPPING DESIGN:

- 1. Program Goals/Learning Objectives**
- 2. Assessment/Evaluation**
- 3. Program Activities**

1. a. PROGRAM GOALS *(What are the key or essential questions about the topic? What big ideas are worthy of understanding?)*

Catherine Nash taught students how to draw the desert landscape through observing desert plants and animals, composing and designing images with a focal point/narrative and gaining experience in the use of varied art media including graphite, colored pencils, and watercolor. Working with all art and science classes, Nash improved students' visual and spatial skills while teaching art and science faculty specific techniques/curriculum.

1. b. LEARNING OBJECTIVES *(What are your learning objectives? What should students know, understand and be able to do by the end of the program?)*

Drawing is first and foremost the art of seeing. Wakefield Middle School recognized that their children needed to be taught how to describe the natural world around them through line, value and color. The residency goals were to enable students by giving them opportunity to become visually literate in understanding how to accurately and expressively render what they actually observe vs. what they think they see. Further, goals included enabling faculty to learn exciting new ways to integrate science with art and to offer students the opportunity to increase their observational and drawing skills. By the end of this project, Wakefield students gained a deeper understanding of our desert environment and began to understand through their creative efforts how vital plant life has been and is to our survival. Teachers are now able to add exciting art techniques to their curriculum to increase student comprehension of ethnic, cultural and ecological values. In addition, the techniques learned have enabled teachers and students to link to reading instruction, properties of materials, cultural advancements and use of tools and materials to create a product. Finally, students increased arts career awareness from exposure to Ms. Nash.

2. a. ASSESSMENT *(How will you know the students really understand the big ideas? How will they demonstrate or perform what they have learned?)*

Student drawings, paintings and illustrated journals were assessed by portfolio review and then displayed for public viewing in the front entranceway of the school, the library and within the science classrooms. In addition, students were given two rubrics in the form of graphic organizers to fill out that tested their understanding of their subject both in science and art: one about desert plants and a second about desert animals. The artist, teachers and administrators reviewed the outcomes to evaluate if current educational standards had been met. The result was affirmative.

2. b. EVALUATION *(How will you evaluate your program's success? At what points will you check in throughout the process to ensure success?)*

During the process of the visual art activities, the artist, students, parents and teachers continually assessed the outcomes of each step toward the final product or outcome. Teachers and Catherine discussed fully each day's events and were able to adjust and refocus quickly when necessary. By evaluating the outcomes along the way, we all could better understand the process involved and improve our own personal understandings of each other's language and subject.

3. PROGRAM ACTIVITIES *(What learning experiences will you present in order to help develop student understanding?)*

Starting by using antique scientific illustrations as inspiration, students then, with specific desert plants in front of them, drew detailed observations of plant structure and growth patterns in their hand-bound journals. They sketched such details as the texture and shape of the leaves and the anatomy of the flowers, culminating in a final desert landscape painting filled with specific species of animals, birds, reptiles and plants. Geared towards giving them a foundation in accurately rendering what they see, students gained skills in eye to hand coordination while they learned about specific life forms in our Arizona desert.

EXTENSION ACTIVITIES: *(What tools will you leave behind for the teacher to develop and implement after you have left the classroom?)*

Catherine not only presented exciting visual arts lessons for our students, but also trained Wakefield faculty in innovative techniques that integrate art with science. Faculty were invited and urged to participate alongside the students in order to gain these skills and confidence to present these lessons themselves in subsequent years. Each participant benefited from increased enrichment and awareness in the areas that Ms. Nash focused upon: research in science, social studies and art/illustration/design. She left specific lesson plans, teacher information sheets and valuable packets with visual imagery and written research for 30+ animal species and 30+ plants from the Sonoran Desert that science teachers can use next year when replicating these lessons on their own.

DOCUMENTATION: *(How will the experience be documented? What formats will be used; video, photos, journal, posters, etc.?)*

Photography